The book bristles with new suggestions, and as such is a contribution of stimulating value. Necessarily, however, many of the conclusions thus put forth somewhat tentatively must be received with reserve.

R. T. C.

The Whitehorse Copper Belt, Yukon Territory. By R. G. McCONNELL. Canada Department of Mines, Geological Survey Branch, 1909.

These very interesting copper deposits are located in the southern part of the Yukon territory, extending along the valley of the Lewes River for a distance of about twelve miles. The rocks of the district are limestones probably belonging to the Carboniferous period, cut by three sets of intrusions of Mesozoic age. Of these the second set, consisting of granites and granodiorites, are economically important. Overlying these rocks are basalt flows belonging to the Tertiary, and glacial silts and bowlder clays.

The ore deposits are all contact metamorphic in origin, chiefly in the limestone along its contact with the granite. Two types of deposits are noted, the magnetite ore bodies and the siliceous ore bodies. In the former, the chief minerals are magnetite, bornite, chalcopyrite, serpentine, calcite, clinochore, rarely pyrrhotite and sphalerite. In the latter, associated with the ore minerals, bornite and chalcopyrite, are andradite, augite, tremolite, actinolite, epidote, and calcite. The granite itself is mineralized for some distance from the contact, the same minerals being developed as in the limestone. The deposits are peculiar in having bornite as the principal ore mineral, and in having little or no secondary sulphide enrichment. The values in copper range from 3.20 per cent to 12.90 per cent, the richest being from the Valerie Mine, in which bornite is absent and chalcopyrite is the only known copper sulphide present.

E. R. L.

Eighteenth Annual Report of the Bureau of Mines, Ontario, 1909. Vol. XVIII, Part I.

The Report contains the following papers: "Statistical Review, by Thos. W. Gibson, Deputy Minister of Mines, pp. 5–78; "Mines of Ontario," by E. T. Corkill, Inspector, pp. 79–140; "Iron Ranges of Nipigon District," by A. P. Coleman, pp. 141–53; "Iron Range North of Round Lake," by E. S. Moore, pp. 154–62; "Black Sturgeon Iron Region," by A. P.

Coleman, pp. 163–79; "Bog Iron on English River," by E. S. Moore, pp. 180–95; "Geology of Onaman Iron Range Area," by E. S. Moore, pp. 196–253; "Iron Formation of Woman River Area," by R. C. Allen, pp. 254–62; "Lake Abatibi Area," by M. B. Baker, pp. 263–83; "Lake Ojibway; Last of the Great Glacial Lakes," by A. P. Coleman, pp. 284–93; "Classification and Nomenclature of Ontario Drift," by A. P. Coleman, pp. 294–97.

E. R. L.

The Yakutat Bay Region, Alaska. U.S. Geological Survey Professional Paper 64. 1909.

Physiography and Glacial Geology. By RALPH S. TARR; and *Areal Geology*, by RALPH S. TARR and BERT S. BUTLER. 183 pages.

Yakutat Bay lies about forty miles southeast of Mount St. Elias, and is the only break in a straight coastline of about three hundred miles. To the west is the great Malaspina Glacier, while numerous large glaciers occupy the region about the head of the bay. Of these the Hubbard Glacier is probably the finest example of a tidal glacier on the North American continent. The mountain region northward from the bay is described as a vast snow-covered area from which hundreds of angular peaks project, while the valleys are flooded with ice, giving rise to an ice drowned topography, from which valley glaciers extend toward and in some cases to the sea. The condition is so different from normal valley glaciation that a special name, "through glacier," is proposed. The glaciers are in a stage of retreat which has apparently been in progress for a considerable length of time. A marked change, in the nature of paroxysmal thrust affected at least four of the glaciers, mainly in the ten months preceding June 1906. As interpreted by the author, this was probably due to the shaking-down of great avalanches of snow onto the upper part of the glaciers by the earthquake of 1899. The description of the glaciers, glacial erosion, and glacial deposits takes up the greater part of the volume.

The rocks of the district are almost barren of fossils and have been subjected to profound disturbance. Four distinct groups are recognized, a complex series of granites, gneisses and schists, the Yakutat group of conglomerate shale and sandstone, probably Mesozoic, Tertiary sandstones, shales and clays, and glacial gravels.

E. R. L.